

B to D for sPHENIX update

04/12/2017

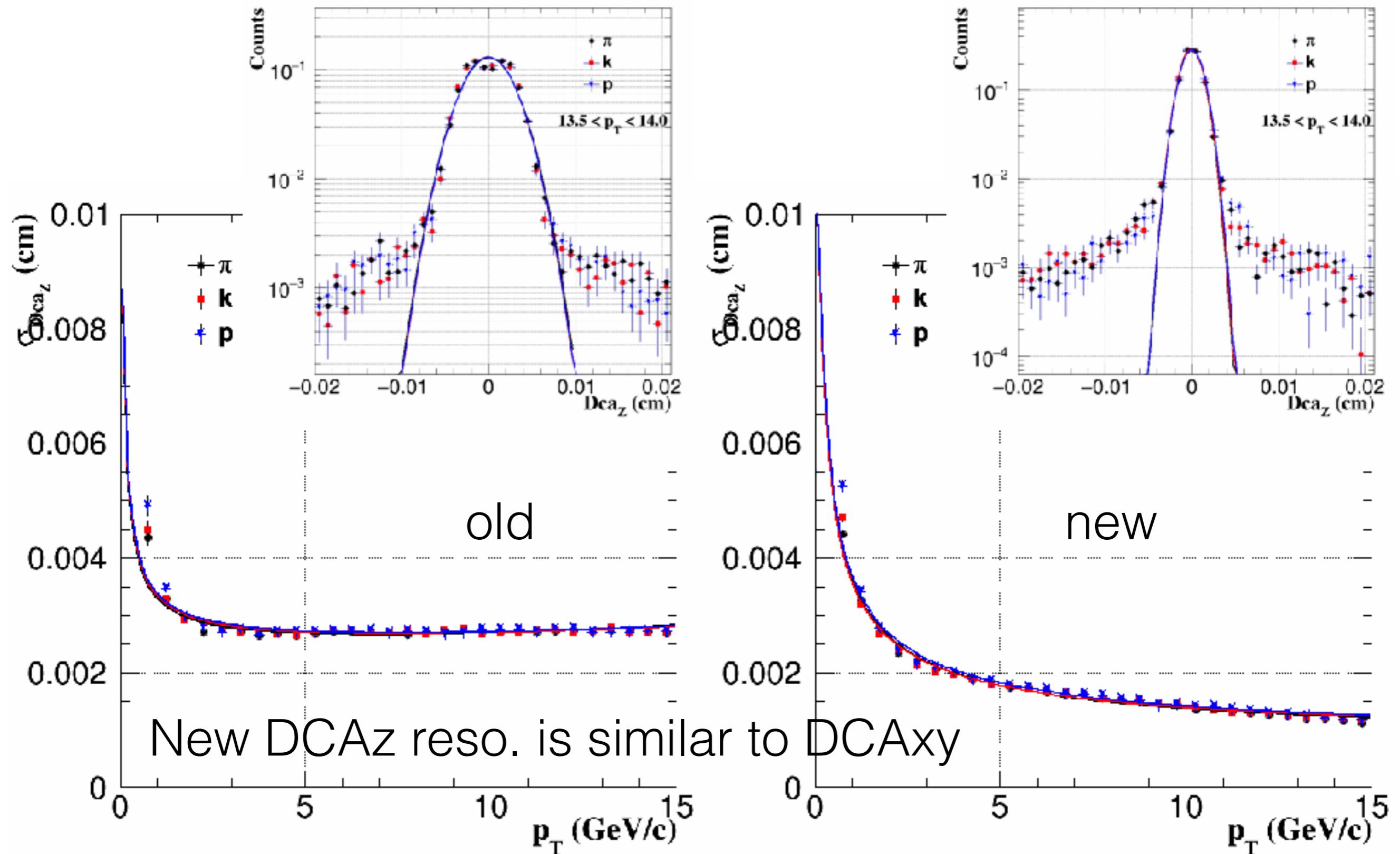
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Update

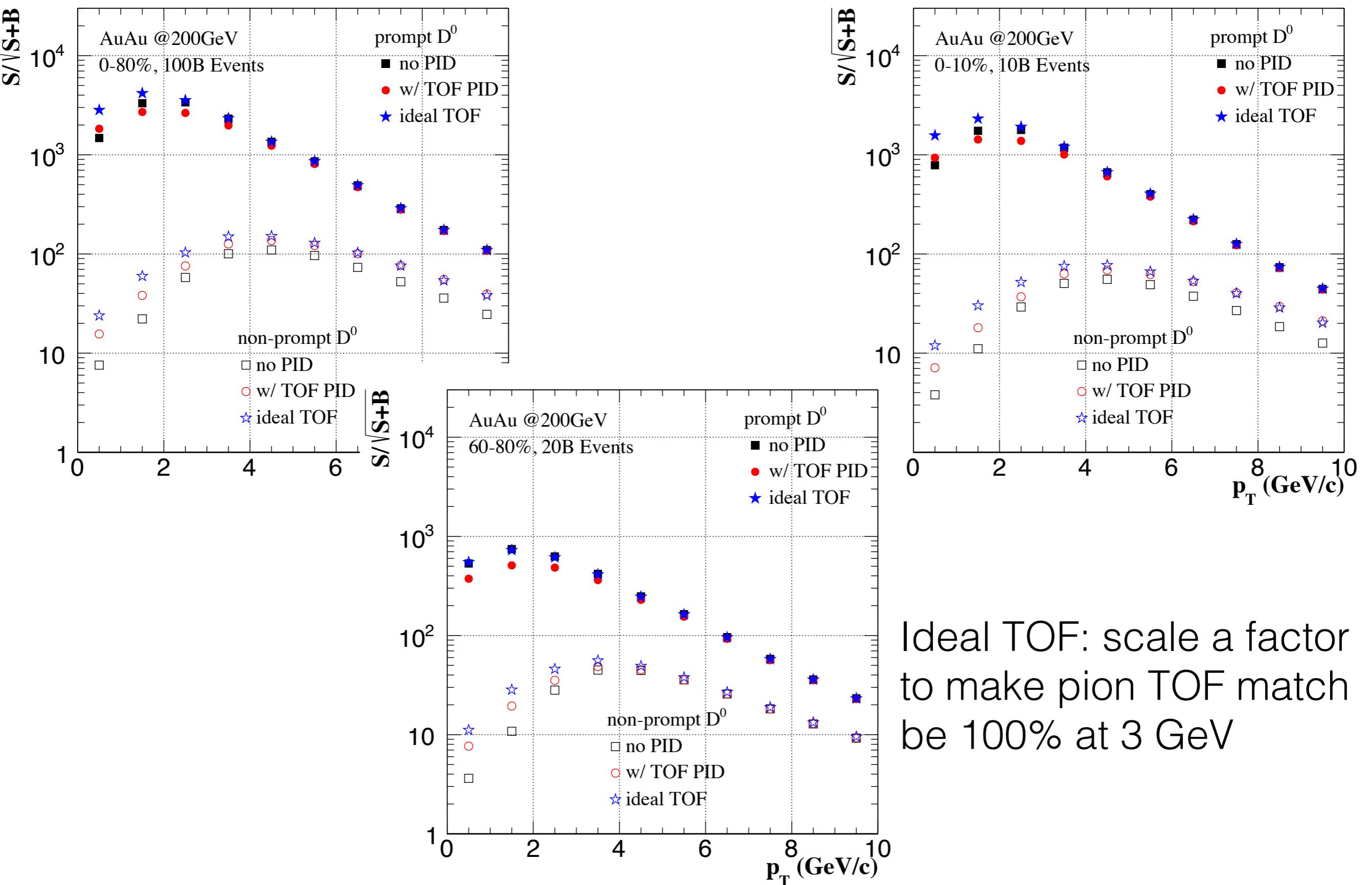
- 1. Re-run full geant simulation (1/31/2016)
DCAz resolution get better
- 2. Fast simulation package update(0-80%, 60-80%)
 - Assume DCA reso., TPC track eff. same as 0-10%
 - Background: k/pi/p number from hijing
 - Signal D0/B pT spectra:

	0-80%	0-10%	60-80%
D0	AuAu data	AuAu data	pp data * Nbin
B	pp FONLL * RAA * Nbin	pp FONLL * RAA * Nbin	pp FONLL * Nbin

DCAz resolution

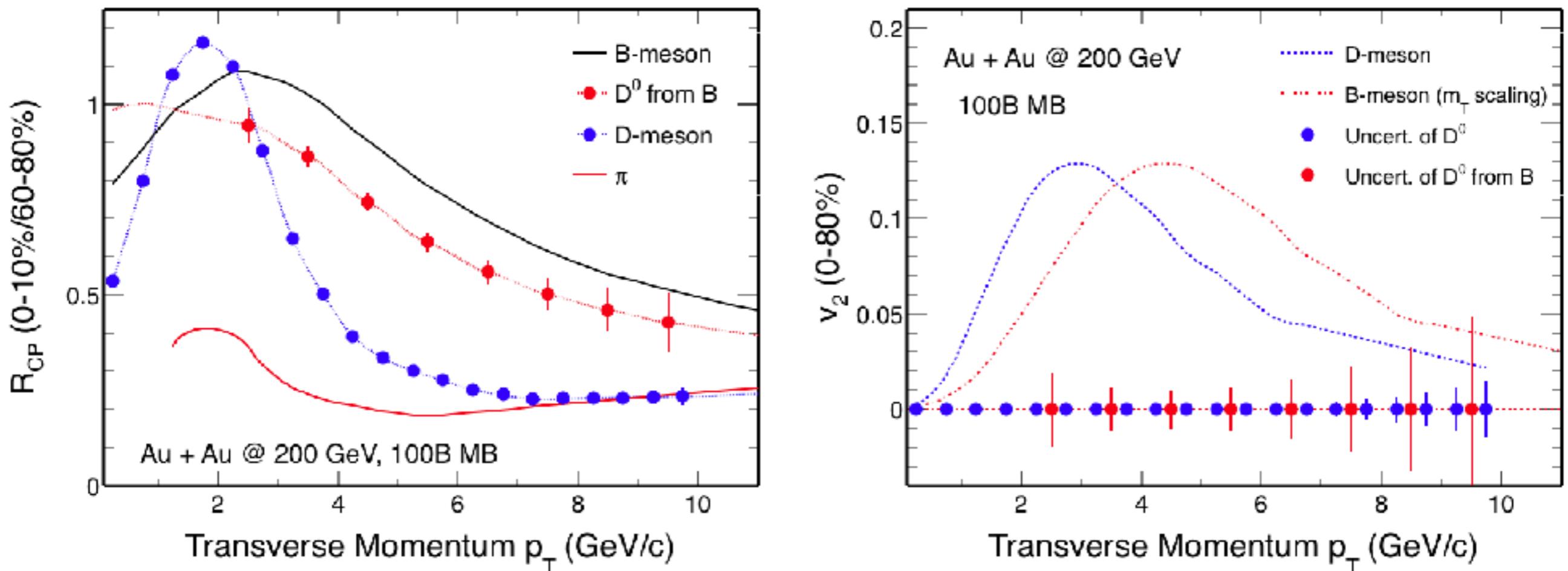


Significance



Ideal TOF: scale a factor to make pion TOF match be 100% at 3 GeV

Rcp and V₂



Rcp theory curves: average R_{AA} of calculations from Duke, TAMU and CUJET

v_2 of D-meson: fit to STAR HFT D^0 data points

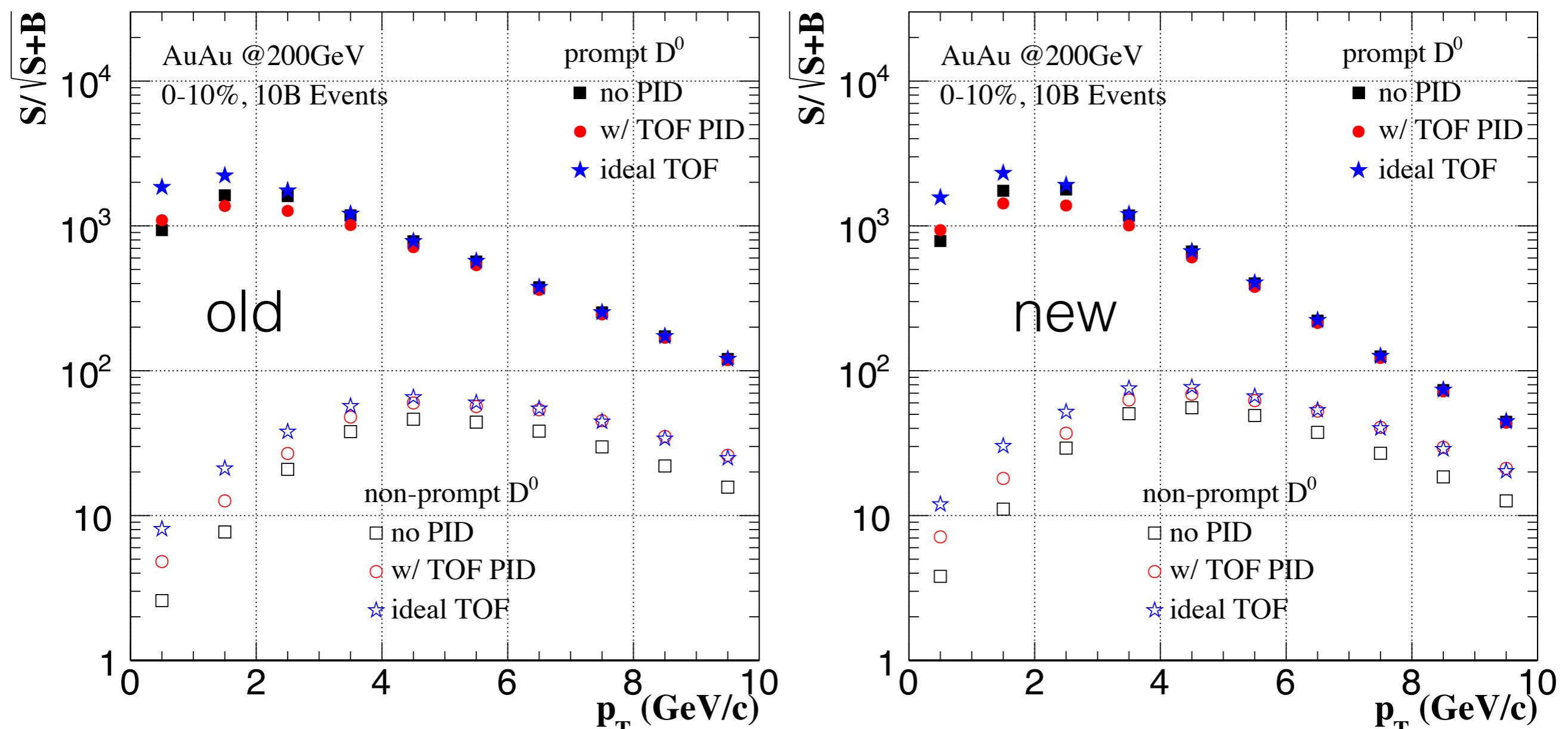
Previous result: Assuming signal scales with N_{bin}, background scales with N_{part}^2

Summary and next to do

- Fast simulation package for 60-80% and 0-80% is ready
- With TOF, non-prompt D0 significance at 0-1GeV is ~7 in central collisions,
- Non-prompt D0 Rcp and v2 is very expected
- Next to do
Re-run full geant simulation with updated version ?
Direct Bplus reconstruction if possible

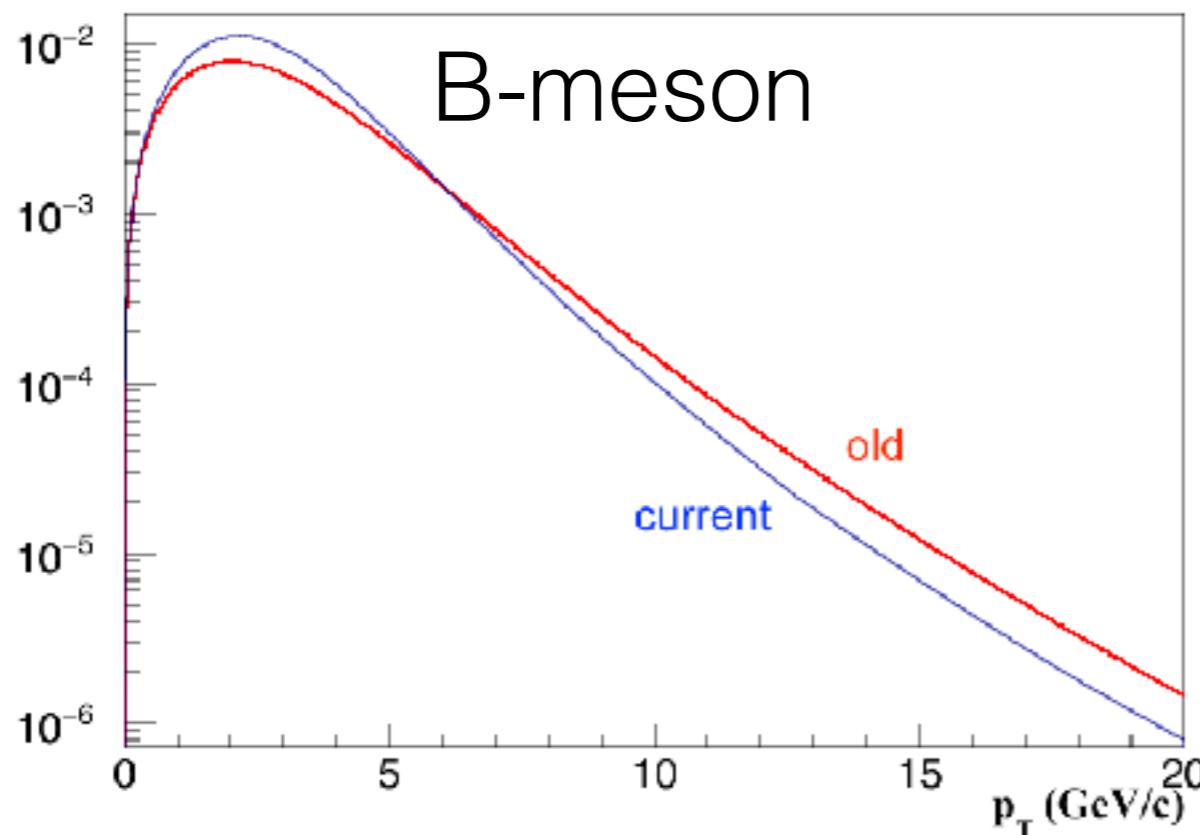
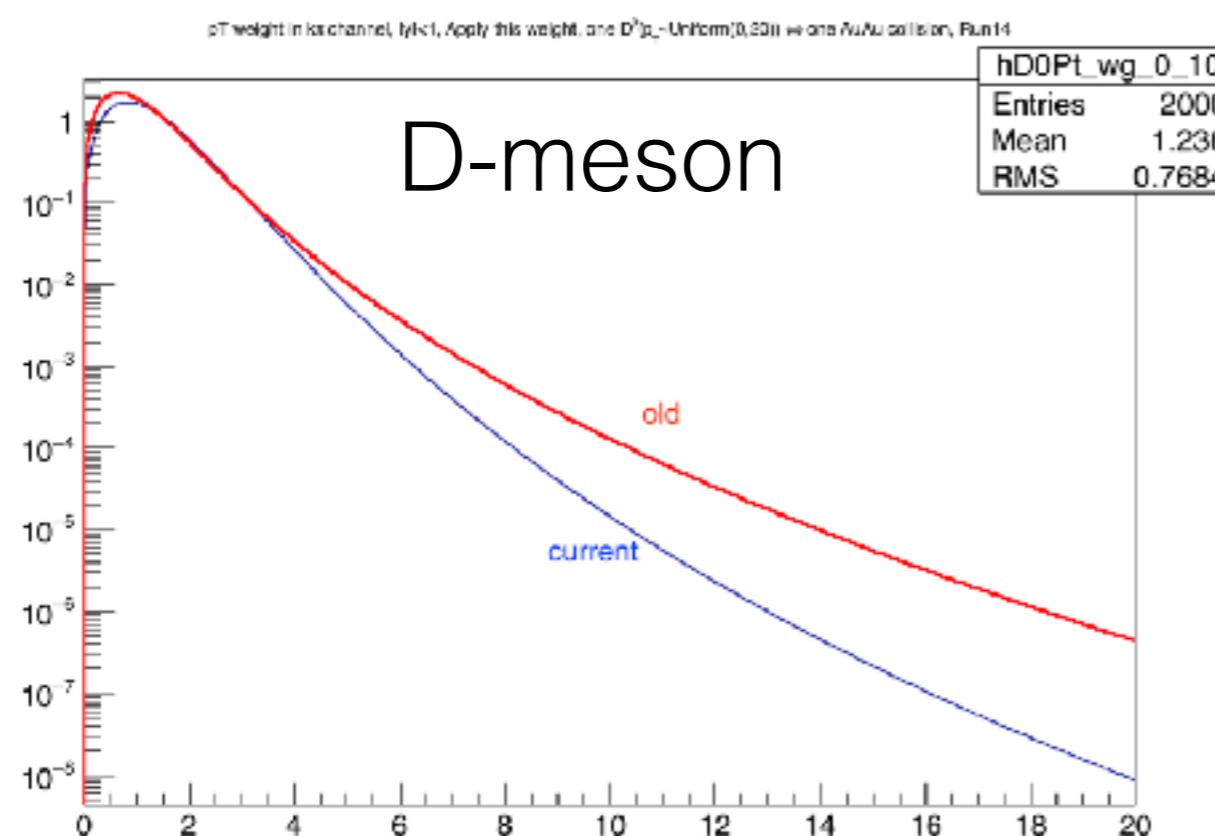
Backup

Significance compare



1. Prompt D0 difference mainly due to the pT shape change, see next slide
2. Non-prompt D0
 - (1) previous assume B RAA = 46/56.8 (=D0 RAA(0-8GeV))
 - (2) Consider B-meson RAA, significance at high pT get lower
 - (3) DCAz reso. get better, efficiency increase but background. decrease

Signal pT shape



consider B RAA (0-10%)
and correct a factor of 1.23